



Docket No.: M4065.0642/P642-A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Giuseppe Rossi et al.

Application No.: 10/798,347

Confirmation No.: 5599

Filed: March 12, 2004

Art Unit: 2858

For: A METHOD FOR DETERMINING
TEMPERATURE OF AN ACTIVE PIXEL
IMAGER AND AUTOMATIC CORRECTING
TEMPERATURE INDUCED VARIATIONS IN
AN IMAGER

Examiner: Nguyen, Vincent Q.

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to the guidelines set forth in the Official Gazette Notice of July 12, 2005 for the Pre-Appeal Brief Conference Program, Applicants respectfully request a review of the legal and factual bases for the rejections in the above-identified application. The request for a Pre-Appeal Brief Conference is proper because there is a clear legal and factual deficiency in the rejections. The Request is being filed concurrently with a Notice of Appeal.

The rejection of claims 68, 69, 76-79 and 86 under 35 U.S.C. §103(a) as being unpatentable over Glukhovsky et al., U.S. Patent No. 6,607,301 ("Glukhovsky") in view of Sakaue, U.S. Patent No. 4,162,411 ("Sakaue") is clearly improper because it omits essential elements required to establish a prima facie rejection under 35 U.S.C. § 103.

The invention relates to determining the temperature of an imager chip, and the specification discloses how the inventors arrived at important aspects of the claimed invention. “The inventors have observed that a CMOS imager pixel dark current doubles every $N^{\circ}\text{C}$ with N being a value which is process dependent and which in general ranges from 6 to 10.” Specification, paragraph [0020]. The specification discloses, for example, that “one way to determine [process constant] α is to use the slope of a logarithmic equation describing dark current measurements at specific sensor temperatures for chips produced by the same process,” and that “sensor temperature can be calculated from the stored values α ... and a pixel dark current measurement.” Specification, paragraphs [0025] through [0028]. The invention is not limited to the disclosed embodiments.

Claim 68 recites:

68. A method of determining temperature of an imager chip, said method comprising:
storing a fabrication process dependent value for an imager chip;
storing at least one chip dependent value representing a measured pixel dark current reference value and a reference temperature at which said chip dependent dark current reference value was measured;
measuring a dark current value of a pixel on said chip; and
determining a chip temperature representation based on said measured dark current value and stored values.

The Final Rejection admits (at p. 3) that Glukhovsky fails to teach or suggest “storing a fabrication process dependent value for an imager chip [and] storing at least one chip dependent value representing a measured pixel dark current reference value and a reference temperature at which said chip dependent dark current reference value was measured” as recited in lines 3-7 of claim 68. The Final Rejection asserts (at p. 3), however, that “it would have been obvious to do [every limitation quoted above] since Gluhovsky et al. suggested performing calibration (column 3 lines 51-57).” Thus, the Final Rejection asserts is as follows:

- The limitation “storing a fabrication process dependent value for an imager chip” would have been obvious “since Gluhovsky et al. suggested performing calibration.”
- The limitation “storing at least one chip dependent value representing a measured pixel dark current reference value” would have been obvious “since Gluhovsky et al. suggested performing calibration.”
- The limitation “storing ... a reference temperature at which said chip dependent dark current reference value was measured” would have been obvious “since Gluhovsky et al. suggested performing calibration.”

The foregoing does not approach the legal or factual requirements for establishing *prima facie* obviousness. To establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. “The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.” MPEP § 2142 (emph. added). The Final Rejection failed to factually support the conclusions that several limitations of claim 68 are taught or suggested by Gluhovsky. As such, the rejection is legally deficient.

As Applicants previously explained,¹ the portion of Glukhovsky relied upon by the Final Rejection discloses only a “processor capable of ... calculating the image sensor temperature 17 using the known equations derived for thermal noise. It will be appreciated that these equations are an approximation of a complex phenomenon and that calibration should be employed in order to deduce the actual calculations that will be applied.” The foregoing disclosure fails to teach or suggest the specific above-quoted limitations of claim 68, and of course fails to supplement the insufficient assertions in the Final Rejection. For these reasons, the rejection should be withdrawn.

The Sakaue reference is relied upon in the Final Rejection (at p. 3) because it allegedly “discloses [an] imager chip (CCD device) wherein the amount of dark current changes due to temperature (thermal excitation) and depends on semiconductor substrate and manufacturing process of the device (column 1 lines 22-27).” The Final Rejection then jumps to an assertion (at p.

¹ Applicants previously filed an Amendment on September 4, 2007 (“the September 2007 Amendment”) and a Request for Reconsideration on January 22, 2008 (“the January 2008 Request”) with arguments to support their positions.

3) that the foregoing disclosure of Sakaue would have made it obvious to modify Glukhovsky as asserted. The Final Rejection does not rely on Sakaue to supply the teachings missing from Glukhovsky and, therefore, the deficiencies of Glukhovsky are not remedied by Sakaue. The Final Rejection agrees because it does not assert that Sakaue teaches or suggests the missing limitations, but rather that Sakaue would have made obvious an imaginary redesign of Glukhovsky.

Moreover, claim 68 recites “determining a chip temperature representation based on said measured dark current value and stored values.” The Final Rejection asserts (at p. 2) that Glukhovsky teaches the subject limitation by simply retyping the limitation, but without any required explanation. As discussed above, Glukhovsky fails to teach or suggest any of the “stored values” recited in claim 68, and, thus, fails to teach or suggest “determining a chip temperature representation based on said measured dark current value and stored values.” No other reference is relied upon to supplement this deficiency of Glukhovsky, and the rejection should be withdrawn for this additional reason.

The Final Rejection also asserts (at p. 8) that “[i]t is well know that the dark current is typically ... a result of surface damage ... resulting from manufacturing processes such as gate and spacer etching steps,” and that “dark current can result in reduced pixel sensitivity and lower dynamic range of the image sensor device.” Based on the foregoing, the Final Rejection concluded that “the step of ‘storing a process dependent value’ or ‘determining a chip temperature representation based on stored values’ is the typical way in the art to enhance the sensitivity of the imager sensor.” Initially, as Applicants pointed out in the January 2008 Request (at pp. 11-13), the asserted “well known” steps do not correspond to the claim language. Thus, this assertion adds nothing to the improper rejection. Moreover, this is an improper new rejection based on the assertion that the aforementioned process steps are “typical” in the art. “It is never appropriate to rely solely on ‘common knowledge’ in the art, without evidentiary support in the record, as the principal evidence upon which a rejection was based.” MPEP § 2144.03.A (legal citations omitted).

Notwithstanding the fact that neither Glukhovsky or Sakaue, whether taken alone or in combination, fail to teach or suggest all of the limitations of claim 68, Applicants explained with

particularity in the September 2007 Amendment (at pp. 14-15) and the January 2008 Request (at pp. 13-14) that the references are not properly combinable as suggested to arrive at claimed invention. The Final Rejection responded (at p. 9) with a form paragraph, stating that “the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art” This bare, unsupported assertion failed to respond to Applicants’ arguments, and is traversed as failing to comply with the requirements set forth in MPEP § 2142 for establishing a prima facie case of obviousness.

Regarding claims 69, 76-94 and 103, Applicants respectfully refer the panel to the arguments in the September 2007 Amendment (at pp. 15-17) and the January 2008 Request (at pp. 14-16), as suggested in paragraph 4 Official Gazette Notice of July 12, 2005.

Applicants’ representative conducted a telephone interview with Examiner Vincent Q. Nguyen on March 18, 2008. The Examiner maintained the position that the Final Rejection’s assertion that Glukhovsky “suggested performing calibration” is sufficient for a proper rejection. In view of the above, however, Applicants submit that the rejections are erroneous and must be withdrawn.

Dated: March 19, 2008

Respectfully submitted,

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